

*Noted by...*  
*01/11/94*

THE TRUSTEES OF RESERVATIONS  
PIPING PLOVER RESEARCH AND PROTECTION PROGRAM  
at Coskata Coatue Wildlife Refuge, Nantucket, Massachusetts.  
1994 Report

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## ABSTRACT

In 1994 eleven pairs of Piping Plovers (*Charadrius melodus*) were observed at the Coskata Coatee Wildlife Refuge, Nantucket, MA. Of the eleven, ten were observed during the standardized Atlantic coast index count and eight were identified as breeding pairs on the property. Overall the eight breeding pairs produced 11 nests, 23 chicks, and 9 fledglings or 1.1 fledgling per breeding pair. Nest failures in 1994 resulted from predation, 36% (4/11), and flooding by spring new moon high tides, .09% (1/11). Protection efforts in 1994 focused more attention on early season demarkation and protection of suitable nesting habitat with symbolic fencing and signs, and the use of predator exclosures at 27% (3/11) nest sites. Exclosures were used at a portion of nest locations to aid in the evaluation of the effectiveness of this predator deterrent on the study site. ( see Litchfield 1992, Whitman 1993 ) The exclosure design ( Rimmer 1990, Johnson 1992 ) was modified with fruit netting replacing the sisal twine as covers on all 3 exclosures. Use of exclosures in 1994 was successful with 100% (3/3) of the exclosed nests hatching. It is recommended that use of exclosures be extended in 1995 to include all nest attempts, with continued close monitoring of predator activity and the physical functioning of the exclosures. Chick mortality continued to be high on the site with just 39% ( 9 of 23 ) of the chicks hatched surviving to fledge. Vehicle restrictions continued in 1994 in compliance with the Massachusetts Department of Fisheries and Wildlife (MDFW) Guidelines for protection of Piping Plovers. The West beach of Great Point was closed on May 26, and the North half of the Galls and all of Great Point were closed totally to vehicle traffic June 17 through August 4.

## INTRODUCTION

The study sites of The Trustees of Reservations (TTOR) Piping Plover Protection Program on Nantucket were confined to the Coskata Coatee Wildlife Refuge with additional monitoring on Tuckernuck and Muskeget Islands. ( see additional report Tuckernuck and Muskeget ) In its seventeenth year of shorebird monitoring on Nantucket, the Trustees of Reservations' goals were to identify and protect nesting habitat, monitor and promote breeding success of nesting plovers, and to foster education and awareness of it's efforts to refuge visitors. Management efforts continued to apply MDFW guidelines and TTOR priorities for

strong shorebird protection efforts while still encouraging public access (ORV and pedestrian) on the site. As a result, periods of vehicle closures were used at Great Point and the Galls in 1994, as in the 1993 season.

Coskata Coatee continues to host the largest number of breeding pairs of plovers on Nantucket, but new recruitment was seen elsewhere in 1994 with breeding pairs at Low Beach (n=2), Smith's Point (n=2), and Eel Point (n=2). Productivity, although still lower than the MDFW goal of 2.0 fledglings per breeding pair, increased substantially on the site in 1994, and large areas of excellent plover habitat exist on the refuge.

## METHODS

The area included in the study site changed in 1994. Coskata Coatee continued to be the primary focus and Tuckernuck was also monitored with increased visits and contact with residents made. Muskeget island was added to the study area in 1994 with two visits made over the nesting season. The first visit was during the 'window' for the Atlantic coast count (6/5) and the second was made on July 13 to assess productivity. Other Nantucket beaches that were covered in early April and during the window as assistance to the newly hired Audubon monitor Swede Plaut include; Low Beach, Surfside, and Smith's Point. I discovered a 4 egg nest at Smith's Point on 6/3 and reported it that afternoon to Mr. Plaut.

A student intern, Sarahlee McCaffery, assisted in all aspects of TTOR shorebird efforts from 5/15 through 6/5. Two University of Massachusetts Field Station students, Evan Mulligan and John Okray, also provided some assistance in late July and Early August at Coskata Coatee Wildlife refuge.

Methods for monitoring were consistent with 1993 methods, and exclosure methods followed TTOR standards (see Rimmer 1990, Johnson 1992).

## RESULTS AND DISCUSSION

*Breeding Chronology and Productivity:* The first Piping Plovers were observed on the property in the last week of March by Property manager Dick Bellevue and Ranger Victoria Gulljckson. I first noted plovers on my first site visit 4/8, when 4 pairs were observed in the Great Point Wildlife Management Area. The first nest was located on 4/22 and the first nest hatched on 5/31. The last nest hatched on 7/8 and the first and last fledging dates were 6/29 and 7/23,

respectively. The maximum number of first nest attempts was on 5/27 (n=5), with the maximum total number of active nests observed on 6/15 (n=6), and 50% (3/6) of these were second nest attempts. The maximum number of territorial pairs observed on the property at one time were observed on 5/27 (n=10). The majority of the plovers had left the site by 8/1; the last fledgling from the site was observed on 8/20.

Eight pairs of plovers nested at Coskata Coastue in 1994 producing 11 nests, 42 eggs, 23 chicks, and 9 fledglings, a productivity of 1.1 fledgling per breeding pair. The presence of three nonbreeding pairs on the site in 1994 could be an indication of new recruitment of birds to the refuge. Nest hatching success was 55% (6/11) with 36% (4/11) depredated, and .09% (1/11) lost to tidal flooding. The problems observed in 1993, ( Whitman 1993) of numerous eggs/nests failing to hatch were not observed in 1994. Only 1 egg incubated to term failed to hatch in 1994, and the other 3 eggs of the nest all hatched with a few hours of each other on the 28th day of incubation. Chick mortality was typically high on the property with just 39% (9/23) of the total chicks hatched surviving to fledge.

*Predation:* As predation of nests was observed to be high early in the season, the decision was made to exclose a portion of the nests. Fruit netting was used tightly across the tops in an effort to prevent entry by avian predators or feral cats. 100% (3/3) of the exclosed nests hatched, representing two renests and one first nest attempt. In comparison the loss of unexclosed nests to predation was 50% (4/8) with one nest depredated by American Crow (*Corvus brachyrhynchos*) determined by the presence of tracks within six inches of the nest. The other three nests were lost to unidentified predators.

The presence of predators on the study site was noted by direct observation of individuals in close proximity to nest sites and chick foraging areas, and by the identification of tracks and scat in these same areas. Predators observed greater than or equal to five times a week in plover nesting and chick rearing habitat throughout the nesting season include: American Crow, Great Black Backed Gull (*Larus marinus*), Herring Gull (*Larus argentatus*), Black Crowned Night Heron (*Nycticorax nycticorax*), Northern Harrier (*Circus cyaneus*), and feral cat. Owl pellets were also found on the west beach of Great

Point and identified by Karen Combs-Beattie to be the pellets of Barn Owls ( *Tyto alba* ).

American Crows were observed in close contact with plover adults defending young chicks in the Spartina surrounding the Great Point lagoon on 5+ occasions and adult plovers were observed in flight after Northern Harriers on 3 occasions. No plovers were observed in flight defending against either gull species in 1994, but vocalizations and broken wing displays were observed as adults attempted to separate gulls and chicks on 4+ occasions. Black Crowned Night Herons were never noted in close proximity to either adults or chicks but 3-4 individuals were observed 4+ times a week at the Great Point Lagoon from 6/17 through 8/1.

Predator exclosures should be used at all plover nest sites in 1995 unless they are initiated in close proximity (approximately 10m) to already incubating tern nests. Efforts should be made to define and deter the causes of chick mortality as chick loss continues to be a significant limiting factor to the breeding success of Piping Plovers at Coskata Coatee.

*Habitat Protection:* The 1994 season marked the first use of the Washover/Glades area by a breeding pair of plovers and a second new site was used one half mile south of the Brock cottage on the inside trail. Despite the loss of both of these nests to predation use of these sites and others may occur as the breeding population of plovers continues to increase in the state. The following recommendations are intended as additions to my 4/21/1994 memorandum on suitable nesting habitat at Coskata Coatee. ( see appendix ) They are based on my observations from the 1993, and 1994 field seasons and discussions and site visits with Diane Boretos, Scott Melvin, and Lisa Vernegaard.

The Washover (section B) : This area continues to be excellent plover habitat, and as a nest attempt was made in 1994 just south of marker #2, it is likely that it will be used again in the future. An effort should be made to protect the feeding habitat in this and other areas by keeping vehicles above the wrackline with signs, symbolic fencing, or educational of refuge visitors. If birds nest in this area in 1995 the vehicle tracks may need to be raked out prior to the hatch date as this area is heavily used and deeply rutted by ORV use.

East Beach #2 to the Galls (Section D): Due to concern over high spring and storm tides by Property Manager Dick Bellevue, the symbolic fenceline along

this dune is located too close to the vegetation to protect it as suitable habitat. The vehicle corridor needs to be moved East to protect plover habitat as well as comply with Wetlands regulations regarding vehicle use and primary dunes. This may involve periodic moving of the fence line East as the beach widens in the spring, or instituting short-term detours (by way of marker #2 and North Beach) during hours of extreme tides.

The Galls (Section E) : The presence of a territorial and scraping pair of plovers in the Galls this May confirms this area as suitable plover habitat. It should be symbolically fenced by April 1, 1995, with a crossover at the North end as in 1993, and 1994.

Great Point (Section J): Symbolic fencing should be used for the first time by April 1, 1995, creating a border area along the vegetation at Great Point to close the nesting habitat to vehicle and pedestrian use. This wide, flat area is good habitat, especially on the northwest side where vegetation is colonizing the open beach. This property is owned by the United States Fish and Wildlife Service and a management agreement should be reached with them before the start of the next nesting season.

North Beach (Section I) : The symbolic fencing at North Beach should be extended to include the dune blowout/ ORV shortcut, and dune growth at marker #3. Territorial and courting plovers were observed in this area in May and June of 1994, and it is clearly suitable habitat.

Cord of the Bay- Brock cottage to marker #8 (Section K): The West beach in this area has traditionally been neglected in management decisions at Coskata Coatee. It should be evaluated and protected as areas of it are wide enough to constitute plover nesting habitat. ORV use is also severely scarping the dune in this area and these issues could be addressed simultaneously.

## RECOMMENDATIONS

*Habitat Protection:* Efforts should be made to insure that suitable nesting habitat is fenced by the April 1 deadline, especially in the Galls. The Galls could be considered as an area suitable for permanent fencing with a crossover at the north end along the Great Point Wildlife Management area.

*Exclosures:* Exclosures should be used at all plover nest sites unless they are in close proximity to incubating Least or other Tern species. Materials should

be ordered from an off-island source before the start of the nesting season, and provisions should be made to find staffing for the installation of exclosures. This could be the formalization of the use of ranger from the property to assist shorebird staff in these early season activities, or with a network of on call volunteers. This planning is essential to ensure prompt exclosing of nest attempts.

*Research:* Research efforts should continue to focus on causes of nest and chick mortality with the continuation and extension of predator deterrents, especially feral cats. The use of "gull string" should also be continued and closely monitored for effectiveness.

*Public Relations:* Communication with local newspapers should continue as in 1994, with press invited on the property early in the season to report on a the positive angle of bird protection at Coskata Coatue, drawing at least some of the emphasis away from vehicle closures. Good communication between all TTOR staff members on Nantucket, with the clear delineation of TTOR policy, is also needed to assist in public relations with refuge users. Educational signage on plovers, terns, beach vegetation, and seals are also needed at the gatehouse, Great Point, and the closure lines to expand the education and awareness of refuge visitors.

*ORV Restrictions:* Restrictions on ORV use of the property should continue as outlined in the Guidelines for the Management of Barrier Beaches in Massachusetts, Feb, 1994. The West beach of Great Point should be permanently closed as it is an area used heavily by migrating and nesting birds. This area is also very dynamic due to the flooding that frequently occurs where the lagoon used to be open to Nantucket Sound, and is often difficult to access by ORV's anyway. A clear map for the gatehouse which could be used to show the public updated information on areas of restrictions and closures would help the public understand the location of closures, and save the gatehouse staff time in individual explanations.

TABLE 1. PIPING PLOVER PRODUCTIVITY SUMMARY - 1994

Number of Breeding Pairs	8
Total Number of Pairs	11
Total Number of Nests	11
Number of Eggs Laid	42
Number of Eggs Depredated	14 (33%)
Number of Eggs Abandoned	0
Number of Eggs Lost to Overwash	4 (.09%)
Number of Eggs that Failed to Hatch	1 (.02%)
Total Number of Eggs Hatched	23 (55%)
Number of Chicks Depredated	14 (61%)
Number of Chicks Fledged	9 (39%)
Total Chicks Fledged/Breeding Pair	1.1

TABLE 2. EXCLOSURES AND THE FATE OF PIPING PLOVER NESTS-1994

Nest Type	N	#Hatched (%)	#Predated(%)	#Flooded (%)
Exclosed	3	3(100%)	0	0
Unexclosed	8	3(38%)	4(50%)	1(12%)
Totals	11	6(55%)	4(36%)	1 (.09%)

TABLE 3. PIPING PLOVER REPRODUCTIVE SUMMARY- 1994

I.D.#	G.P.	N.B.	Coat	Galls	Total							
	1	2	3	4	5	6	7	8	1	ue 1	1	#
Nest #	1	1	1	1	1	1	-	1	-	1	-	8
Nest #	2	2	-	2	-	-	-	-	-	-	-	3 re-nests
#Eggs Laid	4	4	4	4	4	4	-	4	-	4	-	32 first
#eggs laid	2	4	-	4	-	-	-	-	-	-	-	10 re-nests
#eggs Hatched	0	0	4	0	4	4	-	3	-	0	-	15 first
#Eggs Hatched	0	4	-	4	-	-	-	-	-	-	-	8 re-nests
# of chick Fledged	0	0	3	0	4	0	-	0	-	0	-	7 first
#Of chick fledged	0	0	-	2	-	-	-	-	-	-	-	2 re-nests

TABLE 4. PIPING PLOVER NEST SITE CHARACTERISTICS- 1994

I.D.#	Substrate	D to mHTL	D to Lagoon	D toP.P. Nest	D to L.T. Nest	D to Ist Nest Attempt	VEG. w/in 1m
G.P.1 Nest 1	sand	45m	75m	150m	>250m	-	Ammop hila
G.P.1 Nest 2	sand	64m	-	-	-	>1mile	Cakile
G.P.2 Nest 1	cobble	65m to West	160m	>250m	30m	-	-
G.P.2 Nest 2	sand	78m to East	150m	60m	40m	15m	Cakile
G.P. 3 Nest 1	cobble	55m	25m	30m	60m	-	-
G.P. 4 Nest 1	sand / cobble	40m	50m	30m	-	-	Ammop hila
G.P.4 Nest 2	cobble	30m	60m	25m	10m	10m	Solidago
G.P. 5 Nest 1	sand / cobble	18m	220m	60m	3m	-	Arenaria
G.P. 6 Nest 1	cobble	27m	80m	25m	18m	-	-
G.P. 8 Nest 1	sand	50m	13m	200m	>250m	-	-
Coatue 1Nest 1	sand	95m	-	-	-	-	-

TABLE 5. PIPING PLOVER NESTING PHENOLOGY -1994

I.D.	GP	GP	GP	Coat	NB	Galls								
Nest	1/1	1/2	2/1	2/2	3/1	4/1	4/2	5/1	6/1	7	8/1	uc 1	1	1
1st	4/8	-	4/8	-	4/8	4/8	-	4/	5/1	5/	5/	6/	5/9	5/
sigh								30		26	25	10		25
ting														
1st	4/	6/	5/	6/6	4/	4/	5/	5/	5/	-	5/	6/	-	-
egg	28	18	15		26	22	19	25	15*		31	10*		
laid														
Hatch	-	-	-	7/7	5/	-	6/	6/	6/7	-	7/3	-	-	-
Date				7/8	31		20	25						
Day	-	-	-	26	30	-	26	26	>24	-	29	-	-	-
s of				27										
Inc														
Fledge	-	-	-	-	7/1	-	7/	7/	-	-	-	-	-	-
ge							18	23						
Date														
Day	-	-	-	-	30	-	28	27	-	-	-	-	-	-
s to														
Fledge														
Date	-	-	-	6/	-	-	5/	-	-	-	6/	-	-	-
Excluded				22			27				22			
Sym	PF	PF	PF	6/	PF	5/								
fence												10		20
ce														
orv	-	-	-	6/	5/	5/	5/	5/	5/	-	6/1	6/	-	-
closure				17	26	26	26	26	26		7	12		

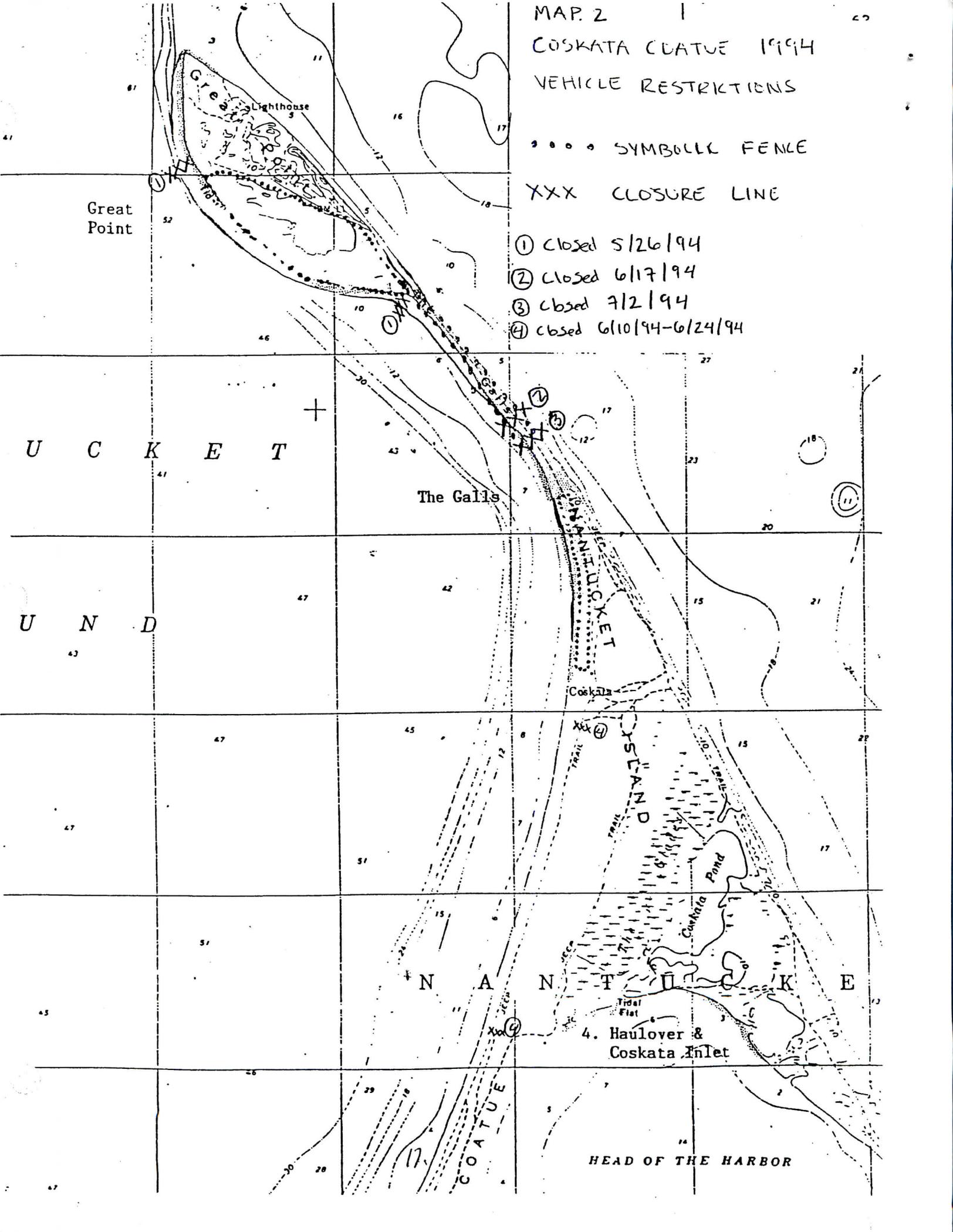
\* -Clutch found complete on this date

PF -Permanently fenced area

MAP. 2  
COSKATA COATUE 1994  
VEHICLE RESTRICTIONS

••••• SYMBOLL FENCE  
XXX CLOSURE LINE

- ① closed 5/26/94
- ② closed 6/17/94
- ③ closed 7/2/94
- ④ closed 6/10/94-6/24/94



MEMORANDUM

To: Chris Kennedy, Dick Bellevue

From: Tina Whitman

Date: April 21, 1994

Re: Plover and Tern Habitat Delineation at Coskata-Coatue

CC: Lisa Vernegaard, Dave Rimmer

The following suitable habitat recommendations are a result of habitat and nesting observations made last season, a recent site visit with Lisa Vernegaard, and discussions with Dick Bellevue. It is intended that these recommendations meet the February 1994 guidelines for the management of barrier beaches; with site specific identification and delineation of suitable nesting habitat. I will follow the format and map used in the April 1993 memo by Vernegaard and Rimmer for continuity with the addition of one area, East of the lagoon at Great Point from marker 6 to the Galls.

Due to extensive symbolic fencing of suitable habitat in 1993 and the lack of any large scale changes in available nesting habitat, habitat delineation should be fairly straightforward in the 1994 season.

**EAST BEACH (Section A)** This first section of beach is wider and has less slope than this time last year. Despite this it is still too narrow, with too steep a primary dune, to be suitable nesting habitat. Vehicles should be kept as far off the dune as possible, as last year with signage, but no other management should be needed.

**THE WASHOVER (Section B)** This area is still suitable nesting habitat for plovers and should remain symbolically fenced. Signs should be used to keep vehicles in the main track on the upper beach to protect this habitat.

**THE #2 CROSSOVER (Section C)** Due to the steep, open slope along this crossover trail it is not suitable nesting habitat. It is currently used as an access trail to Coatue and could be used to access Great Point if nesting occurs north of here in area D.

**EAST BEACH FROM #2 TO THE GALLS (Section D)** This is the one area on the property that has changed significantly from the 1993 season. The area has flattened considerably with numerous dune blowouts that have provided an overall opening up of new suitable plover habitat. The symbolic fencing along East beach should be continued to include this area until the southern point of the Galls. Traffic

should be kept on the upper beach to protect habitat and the Crossover at #2 should be used as alternate route to Great Point in the event of a closure necessitated by plover activity.

THE GALLS (Section E) The Galls is still a very exposed, low area with the south end prone to washover. This area may be suitable plover habitat but is inferior to other sites on the property. This area is, however, suitable tern habitat and the site of the 1993 colony. Vehicular traffic should be kept along the waterlines (above the wrackline) with a crossover at the north end of the Galls. Due to the large size of the area I suggest it be posted with signage and a designated crossover along the south end of Great Point's symbolic fencing. This management should be sufficient until May 15 when the area should be symbolically fenced to prevent disturbance to habitat and prenest behavior of tern species. (Appendix H 1994 guidelines) In the case of plovers observed scraping, copulating, or nesting prior to May 15 the area should be fenced at that point.

LAGOON INTERIOR ROAD (Section F) This wetlands road was closed last season and plover chicks were frequently observed feeding in it at times of tidal flooding. It should remain permanently closed due to its value as a wetland and a plover feeding habitat.

#5 TO THE GALLS (Section G) This area is currently fenced and should remain so as it is excellent habitat used by both terns and plovers. The vehicle trail along the waterline should continue to be closed during the nesting season, as in past years. The date of closure should depend on disturbance to incubating birds or the earliest hatch date, whichever occurs first. The trail along East beach can then be used to access Great Point.

EAST OF THE LAGOON #6 TO THE GALLS (Section H) This area is excellent suitable nesting habitat for plovers with the south end also suitable for terns. It should remain symbolically fenced and closed to vehicles. This is an area of high traffic flow and if disturbance to nesting plovers or terns is observed the area should be widened to eliminate disturbance. Unlike last season, the beach should be wide enough this year to allow this flexibility. The east beach vehicle corridor should be closed to vehicles at the time of the first hatch date or observed hatching. Before decisions about reopening or alternate routes are made the area should be monitored for established feeding patterns. This is essential to adequately provide refuge areas for unfledged chicks as there is no data from last season

on chick feeding habits for this area. A possible detour is the west edge of Great Point depending on the phenology and behavior of its nesting birds.

WEST OF COSKATA/ NORTH BEACH (Section I) This area contains suitable plover nesting habitat that is currently protected by fencing. This should continue as plovers have historically used this site. Disturbances and effects of vehicles on incubating adult plovers should be monitored due to the relative narrowness of the beach. At the earliest hatch date the beach should be closed from the cutover at the Brock cottage to the south end of the Galls. At this point the Crossover at #2 would be the only access route to Coatue.

#### GENERAL CONCERNS

VEHICLES: Prior to hatching vehicles should be kept to designated corridors along suitable nesting habitat. As outlined in the guidelines these should be defined with warning signs or symbolic fencing. Although fencing requires more labor up front, it has been much more successful than signage on this property and should be used whenever possible.

Restrictions on vehicles should begin no later than the earliest hatch date or immediately if hatching occurs earlier than expected.

Speed limits should be kept at 15mph for the property but in order to meet 1994 guidelines, a 5mph speed limit should be enforced surrounding the Great Point wildlife management area. (the area with active nesting pairs/colonies) This lowered speed limit should also be effective immediately in areas where new nesting sites are discovered.

PEDESTRIANS: The 1994 guidelines recommend a 50 yard refuge area around nests and chicks. Due to the probability of numerous plover nest sites and a tern colony within the Great Point management area, pedestrians should be kept out of this area, as they were last year. All other locations should be open to pedestrians unless further nest locations or disturbances by pedestrians are noted.

PETS: Due to the prevalence of pets unleashed and out of the control of their owners last season, I recommend this spring be used as a test period of the Dogs On Leash Only rule. If, based on observations and experience, this continues to be a chronic problem dogs should be prohibited for the remainder of the nesting season.

The determination should be made no later than the earliest hatch date by property manager/ shorebird staff/ TTOR ecology staff. A No Dogs rule would ensure our compliance to state guidelines as well as reduce the energy and time spent on this issue during the height of the season.

## SUMMARY

Due to the low recruitment of new pairs of plovers on Nantucket, Coskata Coalue contains large areas of unoccupied suitable habitat. It is important that we continue to protect these areas and make them available to assist in recruiting young birds to these nesting habitats.

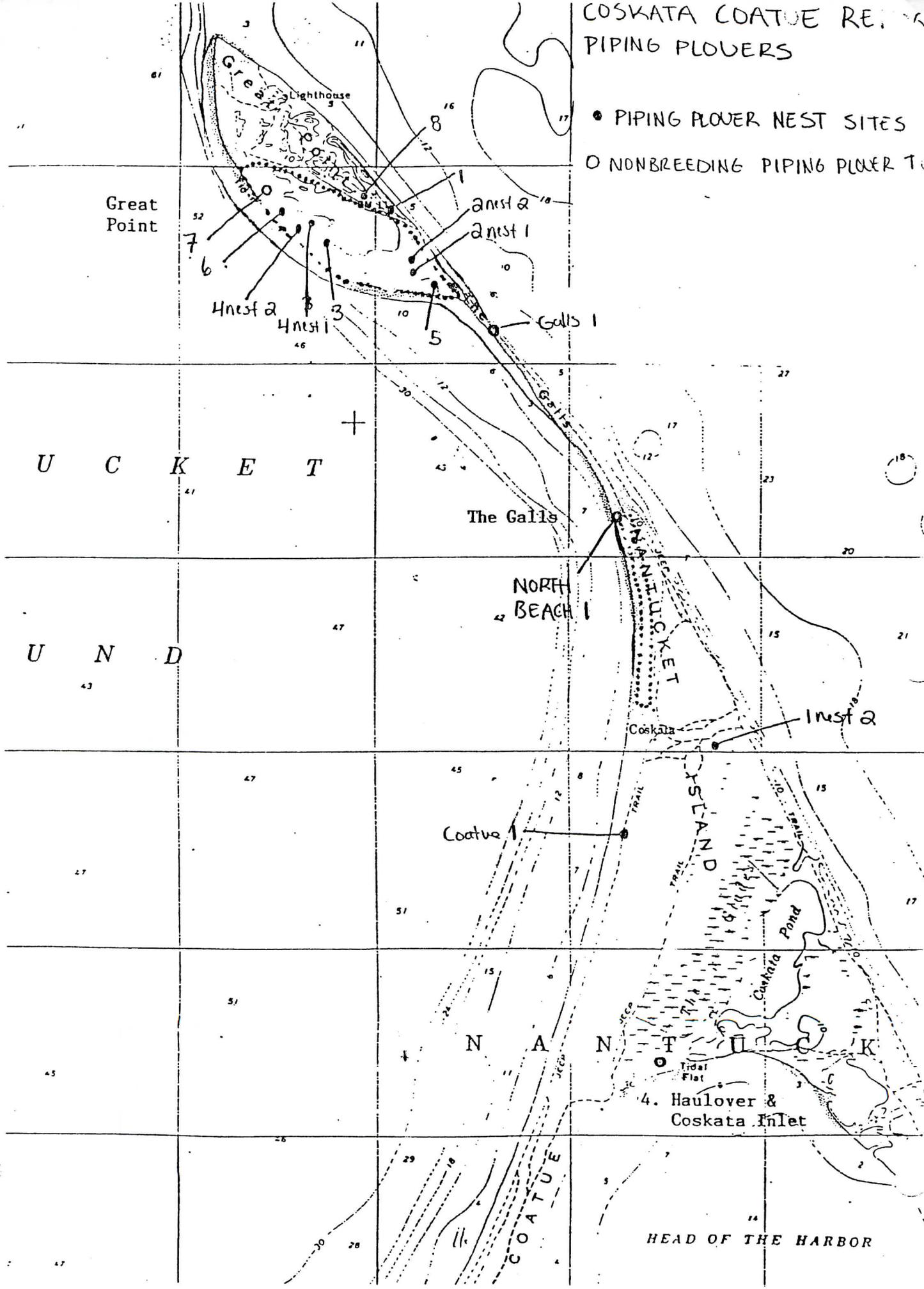
The majority of symbolic fencing has already been completed thanks to a lot of hard work last spring, but the Galls should be closely monitored and fenced as soon as deemed necessary by the shorebird biologist and TTOR ecology staff, with May 15 as the latest date for completion. An earlier date will become necessary in the event of nesting terns or plovers, or if signage is not adequate for keeping traffic out of the interior Galls habitat.

It should be noted that habitat delineation is step one of the guidelines and that these recommendations will be followed up as nesting stages proceed from nest establishment to hatching and fledging. Management changes are inevitable and will depend on the birds phenology and behavior; and protection of chicks as outlined in the 1994 guidelines. As the season proceeds we should expect management and restrictions to become increasingly intensive.

If nesting patterns are similar to last season it is likely that we will experience some period of vehicular closure at Great Point. Through early monitoring and protection of habitat we can attempt to promote successful first nest attempts. Early nesting success should result in a shorter season, thereby reducing the impact on traditional visitor use at Coskata Coalue.

COSKATA COATUE REEF  
PIPING FLOWERS

- PIPING PLOVER NEST SITES
- NONBREEDING PIPING PLOVER T...



Great Point

Lighthouse

The Galls

NORTH BEACH

Coskata

ISLAND

Pond

Tidal Flat

4. Haulover & Coskata Inlet

HEAD OF THE HARBOR

U C K E T

U N D

N A N T U C K

COATUE

# COSKATA COATUE REFUGE PIPING PLOVERS

● PIPING PLOVER NEST SITES

○ NONBREEDING PIPING PLOVER TERRITORIES

Great Point

U C K E T

U N D

The Galls

NORTH BEACH I

Coatue I

Coskata

ISLAND

N A N T U K E

4. Haulover & Coskata Inlet

HEAD OF THE HARBOR

